

Name: answer key TP: \_\_\_\_\_

CW#71H: Quiz Review  
Honors Geometry  
DUE: Wednesday, March 19<sup>th</sup>, 2014

CRS	FUN 703 - Exhibit knowledge of unit circle trigonometry.
Objective	10.13 Find exact values of the 6 trigonometric functions; 10.14 Find reference angles; 10.15A Determine the quadrant [including naming quadrants as an interval] of an angle given the sign(s) of trig function(s); 10.15B Evaluate the 6 trigonometric functions of any angle using reference angles; 10.16 Evaluate inverse trig functions

Failure to show all work and write in complete sentences will result in LaSalle!

### Homework Review:

<p>1) Solve the equation for <math>\theta</math> without a calculator. Give your answer in both radians and degrees.</p> <p><math>\tan \theta = (-\sqrt{3})</math></p> <p><math>\frac{1}{2}, \frac{\sqrt{3}}{2}</math> <math>\frac{-\sqrt{3}}{2}, \frac{1}{2}</math></p> <p><math>\frac{-\sqrt{3}}{2} \cdot \frac{2}{1} = -\sqrt{3}</math></p> <p><math>\frac{1}{2}</math></p> <p><math>300^\circ</math> or <math>\frac{5\pi}{3}</math> or <math>-\pi/3</math> or <math>-60^\circ</math></p>	<p>2) Solve the equation for <math>\theta</math> without a calculator. Give your answer in both radians and degrees.</p> <p><math>\cos \theta = (-\frac{1}{2})</math></p> <p><math>\cos^{-1}(-\frac{1}{2})</math></p> <p><math>90 + 30 = 120^\circ</math></p> <p><math>\frac{2\pi}{3}</math></p>	<p>3) Solve the equation for <math>\theta</math> without a calculator. Give your answer in both radians and degrees.</p> <p><math>\sin \theta = (-\frac{\sqrt{3}}{2})</math></p> <p><math>\sin^{-1}(-\frac{\sqrt{3}}{2})</math></p> <p><math>(\frac{1}{2}, -\frac{\sqrt{3}}{2})</math></p> <p><math>300^\circ</math> or <math>5\pi/3</math> or <math>-60^\circ</math> or <math>-\pi/3</math></p>
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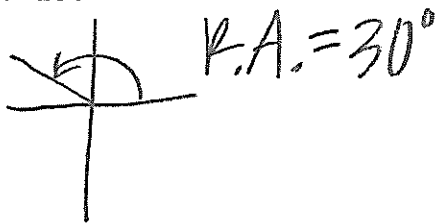
Objective 10.13: Find the exact value of each of the remaining trigonometric functions of  $\theta$ .

<p>1. <math>\sin \theta = \frac{12}{13}</math></p> <p><math>\frac{12}{13}</math></p> <p><math>\sin \theta = 12/13</math></p> <p><math>\cos \theta = 5/13</math></p> <p><math>\tan \theta = 12/5</math></p> <p><math>\csc \theta = 13/12</math></p> <p><math>\sec \theta = 13/5</math></p> <p><math>\cot \theta = 5/12</math></p>	<p>2. <math>\cos \theta = -\frac{4}{5}</math></p> <p><math>\frac{4}{5}</math></p> <p><math>\sin \theta = \frac{3}{5}</math></p> <p><math>\cos \theta = -\frac{4}{5}</math></p> <p><math>\tan \theta = \frac{3}{-4}</math></p> <p><math>\csc \theta = \frac{5}{3}</math></p> <p><math>\sec \theta = \frac{5}{-4}</math></p> <p><math>\cot \theta = \frac{-4}{3}</math></p>
<p>3. <math>(-3, -3)</math></p> <p><math>\frac{-3}{-3\sqrt{2}}</math></p> <p><math>\frac{9+9}{2\sqrt{2}} = 3\sqrt{2}</math></p> <p><math>\sin \theta = \frac{-3}{-3\sqrt{2}} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}</math></p> <p><math>\cos \theta = \frac{-3}{-3\sqrt{2}} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}</math></p> <p><math>\tan \theta = \frac{-3}{-3} = 1</math></p> <p><math>\csc \theta = \frac{3\sqrt{2}}{1} = 3\sqrt{2}</math></p> <p><math>\sec \theta = \frac{3\sqrt{2}}{1} = 3\sqrt{2}</math></p> <p><math>\cot \theta = \frac{1}{1} = 1</math></p>	<p>4. <math>(\frac{\sqrt{3}}{2}, \frac{1}{2})</math></p> <p><math>\frac{\sqrt{3}}{2}</math></p> <p><math>\sin \theta = \frac{1}{2}</math></p> <p><math>\cos \theta = \frac{\sqrt{3}}{2}</math></p> <p><math>\tan \theta = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}</math></p> <p><math>\csc \theta = 2</math></p> <p><math>\sec \theta = \frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3}</math></p> <p><math>\cot \theta = 3</math></p>

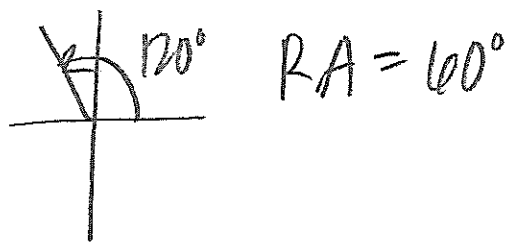
**Objective:** 10.14 - Find reference Angles

Find the reference angle of each angle. **GRAPH THE ANGLES IN THE COORDINATE PLANE.**

5.  $150^\circ$



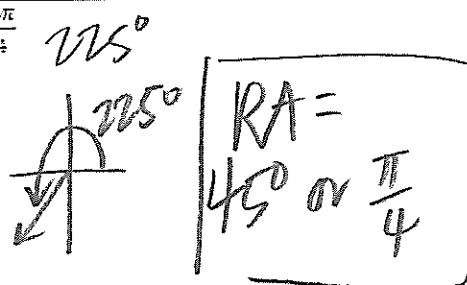
6.  $120^\circ$



7. Rewrite the expression using reference angles and then solve.

$\sin 135^\circ + \cos 17\pi/6 + \tan(-\pi/3)$   
 $\sin 45^\circ \cos 30^\circ$   
 $+ \frac{\sqrt{2}}{2} + \frac{-\sqrt{3}}{2} + \frac{-\sqrt{3}}{2}$   
 $\frac{\sqrt{2} - 3\sqrt{3}}{2}$

8.  $\frac{5\pi}{4}$



**Objective:** 10.15a - Determine the quadrant [including naming quadrants as an interval] of an angle given the sign(s) of trig function(s)

**Directions:** Name the **quadrants** for the following reference angles, given the inequalities.

10. If  $270^\circ < \theta < 360^\circ$ , then we know  $\theta$  lies in which quadrant?

And the reference angle  $\theta' = 360 - \theta = \theta'$

9. If  $180^\circ < \theta < 270^\circ$ , then we know  $\theta$  lies in which quadrant?

And the reference angle  $\theta' = \theta - 180^\circ = \theta'$

11. If  $90^\circ < \theta < 180^\circ$ , then we know  $\theta$  lies in which quadrant?

And the reference angle  $\theta' = 180 - \theta = \theta'$

12. Practice Quiz Question: Find the remaining 6 trig functions of  $\theta$  given the following:

$\sec \theta = 2$   
 $\sin \theta < 0$   
 $\cos \theta = \frac{1}{2}$   
 $\sin \theta = -\frac{\sqrt{3}}{2}$   
 $\tan \theta = -\frac{\sqrt{3}}{2}$   
 $\csc \theta = \frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$   
 $\sec \theta = 2$   
 $\cot \theta = \frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$

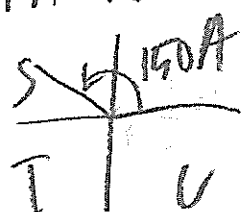
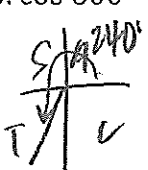
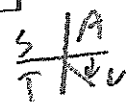

13. Practice Quiz Question: Find the exact value for the following:

$\sin 510^\circ$   
 $RA = 30^\circ$   
 $\sin 30^\circ = \frac{1}{2}$

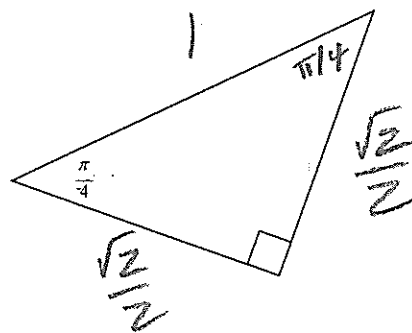
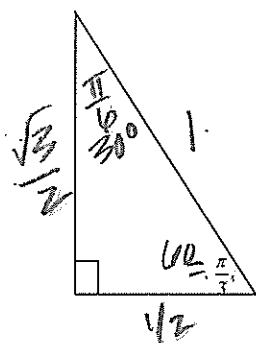
Explain how you determined the quadrant of  $\theta$  and include a graph of your triangle.

$\sin 30^\circ = \frac{1}{2}$   
 positive b/c  $\sin$  is positive in Q2

**Objective:** 10.15B - Evaluate the 6 trigonometric functions of any angle using reference angles

<p>14. <math>\sin 510^\circ</math></p> <p>RA = <math>30^\circ</math></p>  <p><math>\sin \theta = \frac{1}{2}</math> <math>\csc \theta = 2</math></p> <p><math>\cos \theta = -\frac{\sqrt{3}}{2}</math> <math>\sec \theta = -\frac{2}{\sqrt{3}}</math></p> <p><math>\tan \theta = -\frac{1}{\sqrt{3}}</math> <math>\cot \theta = -\sqrt{3}</math></p>	<p>15. <math>\cos 600^\circ</math></p> <p>RA = <math>60^\circ</math></p>  <p><math>\sin \theta = -\frac{\sqrt{3}}{2}</math> <math>\csc \theta = -\frac{2}{\sqrt{3}}</math></p> <p><math>\cos \theta = -\frac{1}{2}</math> <math>\sec \theta = -2</math></p> <p><math>\tan \theta = \sqrt{3}</math> <math>\cot \theta = \frac{\sqrt{3}}{3}</math></p>
<p>16. <math>\cos 540^\circ - \tan(-405^\circ)</math></p> <p><math>180^\circ</math> <math>45^\circ</math></p>  <p><math>-1 - (-1)</math></p> <p><math>0</math></p>	<p>17. <math>6\cos\left(\frac{3\pi}{4}\right) + 2\tan\left(-\frac{\pi}{3}\right)</math></p>  <p><math>6\left(-\frac{\sqrt{2}}{2}\right) + 2\left(-\sqrt{3}\right)</math></p> <p><math>-3\sqrt{2} - 2\sqrt{3}</math></p>

Fill in the ratios for the special right triangles given the location of the marked angle. Use these ratios to help you answer 18-23



**Objective:** 10.6 Evaluate inverse trig functions (4)

<p>18. <math>\cos^{-1} \frac{\sqrt{3}}{2}</math></p> <p><math>\theta = 30^\circ</math> in degrees <math>\theta = \frac{\pi}{6}</math> in radians</p>	<p>19. <math>\tan^{-1} \sqrt{3}</math></p> <p><math>\theta = \frac{\pi}{3}</math> in radians <math>\theta = 60^\circ</math> in degrees</p>
<p>20. <math>\sec^{-1} \sqrt{2}</math></p> <p><math>\cos^{-1} \left(\frac{1}{\sqrt{2}}\right) = \frac{1}{\sqrt{2}} = \frac{2}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \sqrt{2}</math></p> <p><math>\theta = \frac{\pi}{4}</math> in radians <math>\theta = 45^\circ</math> in degree</p>	<p>21. <math>\cot \theta = 1</math></p> <p><math>\frac{\sqrt{2}/2}{\sqrt{2}/2} = 1</math></p> <p><math>\theta = \frac{\pi}{4}</math> in radians <math>\theta = 45^\circ</math> in degrees</p>

Practice Multiple Choice Quiz:

1) If  $\theta$  is an acute angle of a right triangle and  $\tan \theta = \frac{2}{3}$ , what is the value of  $\sec \theta$ ?

A.  $\frac{3\sqrt{13}}{13}$

B.  $\frac{\sqrt{13}}{3}$

C.  $\frac{3}{2}$

D.  $\frac{5}{2}$

E.  $\frac{13}{3}$



$\frac{1}{\cos}$

$\frac{\sqrt{13}}{3}$

2) What is the reference angle for  $-\frac{7\pi}{4}$ ?

A.  $-\frac{\pi}{3}$

B.  $-\frac{\pi}{4}$

C.  $\frac{\pi}{6}$

D.  $\frac{\pi}{4}$

E.  $\frac{\pi}{3}$

$7 \times 180 = 1260$   
 $\frac{1260}{4} = 315$



$360$   
 $-315$   
 $\hline 45^\circ$

3) Find the exact value of the expression  $\csc(-\frac{2\pi}{3})$ .

A.  $-\sqrt{3}$

B.  $\frac{2\sqrt{3}}{3}$

C.  $\frac{\sqrt{3}}{3}$

D.  $\frac{2\sqrt{3}}{3}$

E.  $\sqrt{3}$

$\csc(-120)$



$\csc = \frac{1}{\sin 60} = \frac{1}{\frac{\sqrt{3}}{2}} = \frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$

$\sin 60 = \frac{\sqrt{3}}{2}$

$-\frac{2\sqrt{3}}{3}$

4) What is the value of the expression  $\cos^{-1}(-1)$ ?

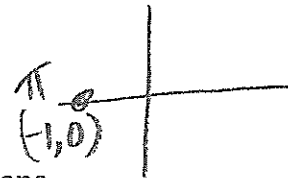
A.  $2\pi$  radians

B.  $-\frac{\pi}{2}$  radians

C. 0 radians

D.  $\frac{\pi}{2}$  radians

E.  $\pi$  radians



5) Let  $(-\sqrt{3}, -1)$  be a point on the terminal side of an angle  $\theta$  in standard position. What is the value of  $\cot \theta$ ?

A.  $-\sqrt{3}$

B.  $-\frac{\sqrt{3}}{3}$

C.  $\frac{\sqrt{3}}{3}$

D.  $\frac{\sqrt{3}}{2}$

E.  $\sqrt{3}$



$\frac{\sqrt{3}}{-1} = -\sqrt{3}$

6) For  $0 < x < 2\pi$ , if  $\tan x < 0$  and  $\cos x < 0$ , what are the possible values of  $x$ ?

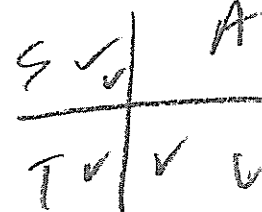
A.  $0 < x < \frac{\pi}{2}$

B.  $\frac{\pi}{2} < x < \pi$

C.  $\pi < x < \frac{3\pi}{2}$

D.  $\frac{3\pi}{2} < x < 2\pi$

E.  $0 < x < 2\pi$



$\frac{\pi}{2} \rightarrow \pi$

Answers: 1. \_\_, 2. \_\_, 3. \_\_, 4. \_\_, 5. \_\_, 6. \_\_